WHAT IS CLAIMED IS:

1. A method of making a tool for molding a part, the method comprising the steps of:

providing a plurality of tool sections in an unhardened state, each of a number of said tool sections having at least one of a groove in a surface thereof and a hole therethrough;

assembling said tool sections with surfaces thereof in facing relationship to form a tool block wherein said grooves and holes form at least one channel in said tool block; and

diffusion bonding said facing surfaces of said adjacent tool sections by pressing said tool sections together at an elevated temperature.

2. A method as in claim 1, wherein said facing surfaces of said tool sections have complementary grooves therein and said tool sections are assembled with said complementary grooves in facing relationship to form said channel.

3. A method as in claim 2, wherein each said groove has a predetermined cross-sectional configuration that provides said channel with a predetermined cross-sectional configuration after said diffusion bonding step.

4. A method as in claim 2, wherein said tool includes at least three said tool sections, at least one of which has grooves in two opposing surfaces thereof.

5. A method as in claim 4, wherein said facing surfaces of said tool sections are planar and opposing surfaces of each said tool section are substantially parallel.

6. A method as in claim 2, wherein said tool includes at least one said groove in one said tool section in fluid communication with at least one said hole through an adjacent said tool section.

7. A method as in claim 1, further comprising the step of grinding and polishing said facing surfaces of said adjacent tool sections to a predetermined surface finish prior to said diffusion bonding step.

8. A method as in claim 7, wherein said predetermined surface finish is controlled to provide a bond between said tool sections that includes imperfections.

9. A method as in claim 8, wherein at least one of the composition of the ambient atmosphere, said pressure and temperature are controlled to provide a bond between said tool sections that includes imperfections for permitting nondestructive separation of said bonded tool sections.

10. A method as in claim 1, further comprising the step of cooling said diffusion bonded tool sections under conditions that leave said material in an annealed state that permits machining thereof.

11. A method as in claim 1, further comprising the steps of:

forming said tool sections so that they assume the shape of a tool when assembled; and

cooling or heating said diffusion bonded tool sections under conditions that leave said material in a hardened state.

12. A method of making a tool for molding a part, the method comprising the steps of:

cutting a body of tool material in an annealed state into layers with opposing surfaces;

forming in each of a number of said layers at least one of a groove in a surface thereof and a hole therethrough;

assembling said layers in facing relationship so that said grooves and holes form at least one channel in said assembled layers; and

diffusion bonding facing surfaces of said adjacent layers by pressing said layers together at an elevated temperature.

13. A method as in claim 12, further comprising the steps of:

cooling said diffusion bonded layers under conditions that leave said material in an annealed state that permits machining thereof;

machining said diffusion bonded layers to form a tool with a predetermined configuration relative to said channel; and

heat treating said machined tool to cause it to assume a hardened state.

14. A method as in claim 12, further comprising the steps of:

forming said layers so that they assume the shape of a tool when assembled; and

cooling said layers under conditions that leave said material in a hardened state.

15. A method as in one of claims 13 and 14, wherein said material is selected from the group comprising:

AISI Designation	Composition (weight %)	HRC
S7 chrome-moly shock resistant steel	C 0.5; Si 0.25; V 3.25; Mn 0.7; Mo 1.4	45-57
A2 air hardening tool steel	C 1.0; V 0.25; Si 0.60; Mo 1.1; Cr 5.25; Mn 0.6	57-62
M2 moly-tungsten high speed steel	C 0.83; Mo 5.0; W 6.35; Cr 4.15; V 1.9	60-65
W2 water hardening carbon tool steel	C 0.070 to 1.3	50-64
420 stainless steel	C 0.3-0.4; Mn 1.0 max; P 0.03 max; S 0.03 max; Si 1.0 max; Cr 12.0-14.0	48-52
H-13 hot work steel	C 0.4; Si 1.0; V 1.05; Cr 5.25; Mo 1.25; Mn 0.4	38-53
D2 high carbon/ high chrome tool steel	C 1.55; Cr 12; Mo 0.08; V 0.09	54-61
D3 high carbon/ high chrome tool steel	C 2.2; Cr 12; V 1.0	54-61

and a beryllium/copper alloy that is heat treatable and has an HRC value of 38-42, and titanium and titanium alloys, and metals from which oxides are removed from said facing surfaces and said surfaces are degreased and cleaned, and wherein HRC is the Rockwell-C hardness of the material in a hardened state.

16. A method as in claim 12, wherein said facing surfaces include indexing means for fixedly locating said surfaces relative to each other and said grooves are located precisely relative to said indexing means.

17. A method as in claim 16, wherein:

said indexing means comprises indexing holes formed in said block before cutting it into said layers;

said layers are cut so that each layer includes at least two indexing holes in said opposing surfaces; and

said layers are assembled by aligning said indexing holes and placing an indexing member therein.

18. A tool with at least one fluid flow channel therein made by a method comprising the following steps:

determining the configuration of said fluid flow channel relative to a molding cavity to be provided in said tool;

cutting a body of tool material in an annealed state into layers with opposing surfaces;

forming in each of a number of said layers at least one of a groove in a surface thereof and a hole therethrough;

providing indexing means for fixedly locating said surfaces relative to each other, said grooves and said holes being located precisely relative to said indexing means;

assembling said layers in facing relationship so that said grooves and holes form said fluid flow channel in said assembled layers; and

diffusion bonding facing surfaces of said adjacent layers by pressing said layers together at an elevated temperature.

19. A tool as in claim 18, wherein the method further comprises the steps of:

cooling said diffusion bonded layers under conditions that leave said material in an annealed state that permits machining thereof;

machining said diffusion bonded layers to form said molding cavity; and

heat treating said machined tool to cause it to assume a hardened state.

20. A tool as in claim 18, wherein the method further comprises the steps of:

forming said layers so that they provide said molding cavity in said tool when said layers are assembled; and

cooling said diffusion bonded layers under conditions that leave said material in a hardened state.

21. An assembly including a plurality of tools as in one of claims 19 and 20, wherein each said fluid flow channel of each said tool has first and second ends, said assembly further comprising a tool baseplate including:

an inlet manifold in communication with a plurality of fluid inlet lines;

a outlet manifold in communication with a plurality of fluid outlet lines; and

a tooling insert pocket in communication with said fluid inlet lines and said fluid outlet lines, wherein said plurality of tools are held in said tooling insert pocket with said first end of said channel of each said tool being in communication with one of said fluid inlet lines and said second end of said channel of each said tool being in communication with one of said fluid outlet lines.

22. An assembly as in claim 21, wherein each said tool has a single fluid flow channel having an inlet port and an outlet port opening in one face of said tool.

23. A tool as in claim 18, wherein said tool includes at least three said layers and said fluid flow channel includes a first flow portion formed by a first and a second said layer and a second flow portion formed by a third said layer and said second layer, said first and second flow portions being parallel and aligned in a direction in which said layers are pressed together in said diffusion bonding step.

24. A tool as in claim 23, wherein said first and second flow portions are connected by a hole through said second layer.

25. A tool as in claim 18, wherein said tool includes at least three said layers and said fluid flow channel includes a first flow portion formed by a first and a second said layer and a second flow portion formed by a third said layer and said second layer, said first and second flow portions being parallel and offset transverse to a direction in which said layers are pressed together in said diffusion bonding step.

26. A tool as in claim 25, wherein said first and second flow portions are connected by a hole through said second layer.

27. A tool as in claim 18, wherein said tool includes at least three said layers and said fluid flow channel includes a first flow portion formed by a first and a second

said layer and a second flow portion formed by a third said layer and said second layer, said first and second flow portions being orthogonal to each other.

28. A tool as in claim 18, wherein said tool includes at least three said layers and said fluid flow channel includes a first flow portion formed by a first and a second said layer and a second flow portion formed by a third said layer and said second layer, said first and second flow portions having non-circular cross-sections.

29. A tool as in claim 18, wherein said tool includes at least three said layers and said fluid flow channel includes first and second flow portions formed by a first and a second said layer and a third flow portion formed by a third said layer and said second layer, said first, second and third flow portions being parallel and offset transverse to a direction in which said layers are pressed together in said diffusion bonding step.

30. A tool as in claim 18, wherein said tool includes at least first and second layers and said fluid flow channel includes a flow portion formed by said first and a second layers, said flow portion having one end terminating in the interior of said tool.